IL31RA gene

interleukin 31 receptor A

Normal Function

The *IL31RA* gene provides instructions for making a protein called interleukin-31 receptor alpha subunit (IL-31RA). This protein is one piece (subunit) of the IL-31 receptor, which is embedded in the cell membrane of many types of cells throughout the body.

At the cell surface, the IL-31 receptor interacts with a protein called interleukin 31 (IL-31). The receptor and IL-31 fit together like a lock and its key, triggering a series of chemical signals inside the cell. These signals stimulate itching (pruritus) and an immune system response called inflammation, although the mechanism is not completely understood.

Health Conditions Related to Genetic Changes

primary localized cutaneous amyloidosis

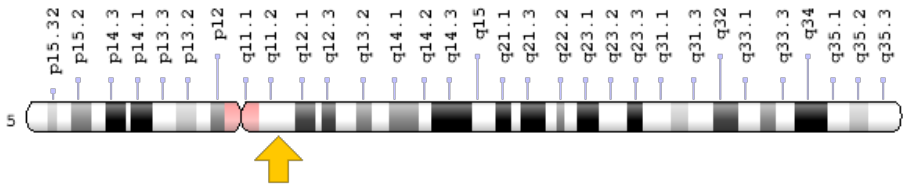
At least one mutation in the *IL31RA* gene has been found to cause primary localized cutaneous amyloidosis (PLCA) type 2, an itchy skin condition in which clumps of abnormal proteins called amyloids build up in the skin. This mutation changes a single protein building block (amino acid) in IL-31RA, replacing the amino acid serine with the amino acid phenylalanine at protein position 521 (written as Ser521Phe or S521F). This change occurs in a region of the protein thought to interact with the other subunit of the IL-31 receptor and may impair the receptor's formation.

The *IL31RA* gene mutation that causes PLCA reduces the chemical signals triggered by IL-31. While IL-31 signaling plays a role in itching, it is unclear how a reduction of this signaling is involved in itchy skin or the buildup of amyloids in PLCA.

Chromosomal Location

Cytogenetic Location: 5q11.2, which is the long (q) arm of chromosome 5 at position 11.2

Molecular Location: base pairs 55,840,334 to 55,922,854 on chromosome 5 (Homo sapiens Annotation Release 108, GRCh38.p7) (NCBI)



Credit: Genome Decoration Page/NCBI

Other Names for This Gene

- class I cytokine receptor
- CRL
- CRL3
- cytokine receptor-like 3
- GLM-R
- GLMR
- gp130-like monocyte receptor
- GPL
- hGLM-R
- IL-31 receptor subunit alpha
- IL-31R subunit alpha
- IL-31RA
- PLCA2
- PRO21384
- soluble type I cytokine receptor CRL3
- zcytoR17

Additional Information & Resources

Educational Resources

- Itch: Mechanisms and Treatment (2014): Role of Interleukin-31 and Oncostatin M in Itch and Neuroimmune Communication
  https://www.ncbi.nlm.nih.gov/books/NBK200913/
- Molecular Biology of the Cell (fourth edition, 2002): General Principles of Cell Communication
  https://www.ncbi.nlm.nih.gov/books/NBK26813/

Scientific Articles on PubMed

- PubMed
  https://www.ncbi.nlm.nih.gov/pubmed?term=%28%28IL31RA%5BTIAB%5D%29+OR+%28interleukin+31+receptor+A%5BTIAB%5D%29%29+OR+%28%28IL-31+receptor+subunit+alpha%5BTIAB%5D%29+OR+%28IL-31R+subunit+alpha%5BTIAB%5D%29+OR+%28IL-31RA%5BTIAB%5D%29%29+AND+%28%28Genes%5BMH%5D%29+OR+%28Genetic+Phenomena%5BMH%5D%29%29+AND+english%5Bla%5D+AND+human%5Bmh%5D+AND+%22last+3600+days%22%5Bdp%5D

OMIM

- INTERLEUKIN 31 RECEPTOR A
  http://omim.org/entry/609510

Research Resources

- Atlas of Genetics and Cytogenetics in Oncology and Haematology
  http://atlasgeneticsoncology.org/Genes/GC_IL31RA.html
- ClinVar
  https://www.ncbi.nlm.nih.gov/clinvar?term=IL31RA%5Bgene%5D
- HGNC Gene Family: Fibronectin type III domain containing
  http://www.genenames.org/cgi-bin/genefamilies/set/555
- HGNC Gene Family: Interleukin receptors
  http://www.genenames.org/cgi-bin/genefamilies/set/602
- HGNC Gene Symbol Report
  http://www.genenames.org/cgi-bin/gene_symbol_report?q=data/hgnc_data.php&hgnc_id=18969
- NCBI Gene
  https://www.ncbi.nlm.nih.gov/gene/133396
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  http://www.uniprot.org/uniprot/Q8NI17

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